

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number  
**WO 2005/019655 A2**

(51) International Patent Classification<sup>7</sup>: **F04D 15/00**,  
13/08

(74) Agents: **BOTTI, Mario et al.**; Botti & Ferrari S.r.l., Via  
Locatelli, 5, I-20124 Milano (IT).

(21) International Application Number:  
PCT/EP2004/009407

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(22) International Filing Date: 23 August 2004 (23.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
MI2003A001661 22 August 2003 (22.08.2003) IT

(71) Applicant (for all designated States except US): **ASKOLL  
HOLDING S.R.L.** (IT/IT); Via Industria, 30, I-36031 Po-  
polaro di Dueville (IT).

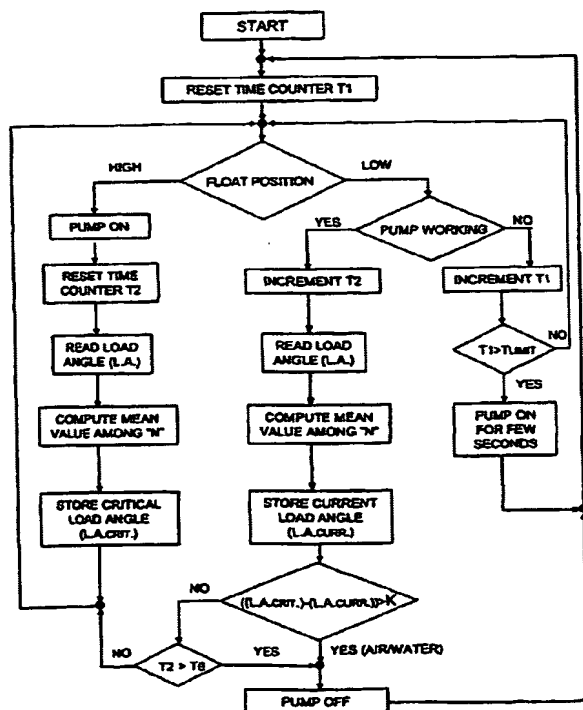
(72) Inventor; and

(75) Inventor/Applicant (for US only): **MARIONI, Elio**  
(IT/IT); Via Molino, 6, I-36031 Dueville (IT).

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: **ELECTRONIC DRIVING DEVICE FOR TURNING ON AND OFF A SYNCHRONOUS PUMP**



(57) **Abstract:** The invention relates to an electronic driving device (20) for turning on and off a synchronous pump, that is a pump (15) comprising a synchronous electric motor (1) with a permanent-magnet rotor (8), comprising: - at least a static power switch (17) inserted in series between the motor (1) and an AC electric power supply source (Vp); and - a processing unit (16) having at least an input receiving a synchronism signal (V) and a control output connected to said switch (17); characterised in that it is enabled by a signal emitted by a float level sensor (40) and includes an input receiving a signal (a) by a position sensor (21) detecting the rotor (8) polarity and position; the pump turn-on and off being regulated according to the signal emitted by said level sensor (40) and to a measured difference between a critical load angle (8) and a current load angle computed during different working conditions of the pump.

BEST AVAILABLE COPY

WO 2005/019655 A2

Express Mail Label  
EV336981630US